



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

The business of expectations

Citation for published version:

Pollock, N & Williams, R 2010, 'The business of expectations: How promissory organizations shape technology and innovation', *Social Studies of Science*, vol. 40, no. 4, pp. 525-548.
<https://doi.org/10.1177/0306312710362275>

Digital Object Identifier (DOI):

[10.1177/0306312710362275](https://doi.org/10.1177/0306312710362275)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Social Studies of Science

Publisher Rights Statement:

© Pollock, N., & Williams, R. (2010). The Business of Expectations: How Promissory Organizations Shape Technology and Innovation. *Social Studies of Science*, 40(4), 525-548 doi: 10.1177/0306312710362275

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



ABSTRACT The business of technological expectations has yet to be thoroughly explored by scholars interested in the role of expectations and visions in the emergence of technological innovations. However, intermediaries specialising in the production, commodification and selling of future-oriented knowledge have emerged to exert new kinds of influence on the shaping of technology and innovation. We focus on the work of those specialist forms of consultants known as ‘industry analysts’ and consider them as *promissory organisations* to capture the fact they are successful in mobilising and indeed increasingly organising expectations within procurement and innovation markets. Our aim is to highlight the important role these actors play in shaping technologies and in so doing how they typically exhibit complex and highly *uneven* forms of influence. The paper is organised around a central question: Why are certain kinds of promissory behaviour more influential than others? To answer this, we draw from the literature on technology expectations on discussions of the ‘constitutive’ nature of promises, which provides a useful but arguably partial analytical approach for articulating the dynamics and differences surrounding product based expectations. We thus supplement our understanding with recent developments in Economic Sociology and the Sociology of Finance where an ambitious theoretical framework is unfolding in relation to the ‘performativity of economic theory’. By contrasting different forms of promissory work conducted by industry analysts and varying forms of accountability to which this work is subject we begin to map out a typology that characterises promissory behaviour according to differences in kind and effect.

Keywords expectations, performativity, industry analysts, Gartner

The Business of Expectations: How Promissory Organisations Shape Technology & Innovation

Neil Pollock and Robin Williams

Introduction

Scholars have demonstrated how technological expectations are influential in the development of new artefacts and knowledge through tracing, in the emergence of specific artefacts and innovation fields, the work of ‘promise builders’ (typically innovation players) whose hopes and efforts are invested in the success of new technologies (van Lente, 1993; Swanson & Ramiller, 1997; van Lente & Rip, 1998; Brown et al., 2000). However, in recent years, we have seen the growth of independent third party organisations dedicating themselves to the production, distribution and selling of future-oriented knowledge and tools (Firth & Swanson, 2005; Burks, 2006). Intermediaries such as ‘industry analysts’ draw up signposts about the state of the industry and its future developments as well as set the criteria by which new innovations may be assessed and judged. These assessments, often critically-oriented towards vendors and their offerings, turn out to fulfil a crucial role in shaping the development of technological fields and constituting markets for constantly changing supplier offerings. Scholars have yet to consider how technological fields may be shaped through interventions by these and similar types of market actors. What influence does the emergence of intermediaries specialising in the *business of technological expectations* have on the development of new technologies?

Our general aim is to throw light on the important function played by specialist forms of consultants in mobilising promise and expectation amongst supplier and users communities alike. We draw on research conducted over several years of study to describe the activities of the biggest industry analyst player in the information technology (IT) area: the Gartner Group.¹ We analyse these actors as ‘promissory organisations’ to capture the predictive element of their work (how they *mobilise* promises about new technologies) but also the wider evaluative, often critical role they play (the *organisation* of the promissory space). Promissory organisations are defined as intermediaries prodigious in the production of future-oriented research that not only represents the state of affairs in a particular marketplace but also contributes to that markets shaping. Our specific aim is to understand the extent to which their advice is ‘performative’. With this it is suggested that technological visions mobilised in the building of technological fields do not simply describe future technologies but also help

bring them into being in some way (van Lente, 1993; Brown et al., 2000; Michael, 2000). Industry analysts appear to be an ideal group to test and develop the emerging performativity thesis in that they exhibit complicated and highly uneven forms of influence. However, whilst current work on the performative nature of technological expectation is suggestive, we argue that it can also be strengthened through the addition of further analytical templates able to track promissory-work with respect to the differing ways it may generate and configure innovation. Thus to fully unpack the work of industry analysts we also draw on recent discussions of the ‘performativity of theory’ emanating from Economic Sociology (Callon, 1998, 2007) and the Sociology of Finance (MacKenzie, 2006, 2009), which include the basis of a framework for conceptualising strong and weak forms of influence and successful and failing forms of knowledge. Inspired also by the argument that the nature, character and effect of promise based assessments are best understood comparatively (cf. Borup et al., 2003), we begin to derive from our fieldwork a *typology of promissory work* that characterises differences between various kinds of promissory behaviour.²

The Sociology of Expectations

Scholars acknowledge how expectations are crucial to the development and shaping of new science and technology. Borup and colleagues (2006: 285-6) argue that little innovation “...can work in isolation from a highly dynamic and variegated body of future-oriented understanding about the future”. Promises are seen to be ‘fundamentally generative’ in the production of artefacts and knowledge. Expectations can help innovators mobilise support and funding for emerging artefacts. Van Lente developed the nostrum ‘by sketching a future, others will find reasons to participate’ to characterise how expectations grab and direct the attention of actors (1993: 187). Stewart (1999) coined the term ‘poles of attraction’ to explore the ways in which (IT supplier) firms seek to mark out their plans and visions of future technology with various identifiable purposes: these include to mobilise the expectations of potential customers and thereby build confidence in, and win commitments to, an emerging technology, and, at times, to ward off competitors, to mobilise fear, uncertainty and doubt and thus frustrate a competing technology. Not only do expectations help enrol external actors (or ward off competitors) they are also seen to guide and shape the activities of technology development teams. They do so, as van Lente (1993) argues, through providing structure and legitimation to an inherently uncertain activity. Working within the Social Study of IT, Swanson and Ramiller (1997) have highlighted the role of ‘organizing visions’ in information systems innovation, encompassing interpretation, legitimation and mobilisation, which help

mobilise the material and intellectual resources needed for innovation. Expectations help build consensus both about what to expect and on the nature of the various opportunities and risks that lay ahead (Borup et al., 2006: 285).

Scholars have focused on the often ‘hyperbolic’ nature of expectations. Gregory, for instance, has developed the concept of ‘incomplete utopian project’ to describe the “phenomenon of envisioning as constructed, evoked, and employed within an innovative intra- and inter-organisational effort, and to open up theorizing about innovation, work practices, and technology” (Gregory, 2000: 180). The word ‘utopian’ draws our attention to the influence of “longstanding deeply shared desires simultaneously characterized by their unrealizability and their devotees’ tendencies to over-reach reality in their pursuit” (2000: 194). It has been suggested - though we are not sure how this can be measured - that expectations are becoming *more* unrealistic and levels of hype are *increasing*. Borup and colleagues (2006: 286) write: “hyperbolic expectations of future promise and potential have become more significant or intense in late and advanced industrial modernity. This shift in intensity is probably connected with a number of tendencies in the contemporary character of science and technology”. These tendencies include but are not limited to the fact that “processes of science and technology innovation have become more complex, with a significant increase in the amount of communication and interaction across institutions and epistemic borders” (ibid: 287).

What is at issue however is not just the growing technical and organisational complexity of innovations, drawing upon growing arrays of knowledge and experience that may be dispersed across occupations and organisations, but also the accelerating pace of innovation. Actors thus seek competitive advantage by improving the efficiency of communication between producers of complementary products and with the ‘market’ constituted by intermediaries and final consumers (Howells, 2006; Stewart & Hyysalo, 2008). We see the emergence of active strategies to grapple with and manage complexity and uncertainty to improve the pace and efficiency of learning rather than simply ‘wait and see’ processes where an innovation succeeds through trial and error. There is as a result greater competition between expectations, meaning more attention is placed on future-based knowledge and its coordination. Added to this, or perhaps because of this, new kinds of activities (road mapping, standardisation, public policies, envisioning, etc.,) and actors (industry watch bodies, consultants, academics and of course industry analysts) are attempting to better regulate and systemise that competition for ideas. In doing so (and perhaps this is what Borup and

colleagues [2006] are referring to), the extent of expectation-building activity has been significantly augmented and has become increasingly pro-active and oriented towards longer-term futures. However, we would argue that what is most interesting about these forms of expectations is not their imputably hyperbolic character but the fact that they are coordinated in a more organised manner.

Expectations and their Accountability

There is an important body of research suggesting that the articulation of expectations and ‘hype’ about new technologies requires serious analysis, as they constitute an important medium for shaping innovation. The reason expectations are often overly optimistic say Geels & Smit (2000: 882) is “...*not* that forecasters or futurists are ignorant or short sighted” but rather that “[i]Initial promises are set high in order to attract attention from (financial) sponsors, to stimulate agenda-setting processes (both technical and political) and to build ‘protected spaces’”. Brown (2003: 17) provides a note of caution arguing that “[i]n so many cases, the present fails to measure up to the expectations once held of it. This can have disastrous consequences for the reputations not only of individuals but entire innovation fields” (ibid: 9). Along similar lines, Borup and colleagues suggest that unrealisable expectations damage credibility because in promising something actors are making themselves responsible for doing that something - they can potentially be “held to future account” (2006: 289). Intuitively we feel this is right but think scholars could also be more nuanced here. It is unlikely that all expectations are accountable in the same way. Longer-term predictions, for instance, might be projected too far into the future and couched in too many techno-scientific uncertainties for any group to be held responsible for their non-materialisation. Conversely, there may be other shorter-term kinds of assessments where there is every possibility that they are subject to scrutiny (and possibly sanction). Moreover, and to move onto the discussion of performativity, if it is true that expectations are subject to different forms of accountability, then this begs the question as to whether they also exercise different forms of ‘influence’.

Expectations as Performative

The notion that promises are ‘performative’ or even ‘constitutive’ of phenomena is a fruitful line of enquiry (van Lente, 1993; Michael, 2000; Borup et al., 2006) but also one that needs strengthened through the addition of new theoretical templates and further empirical work. The clearest example of how the notion of performativity has been applied within the work on expectations is the history of the microchip. In the 1960s G.E. Moore predicted that the

microchip would continue to increase in complexity and processing power geometrically year upon year. ‘Moore’s law’, as it has become known, was widely judged to have been a successful prediction on the basis that it was a ‘self-fulfilling prophecy’:

This prediction turned out to hold so well that we may speak of a self-fulfilling prophecy. The fulfilling did not occur because it was a prophecy, but because actors have taken up the prophecy, and acted accordingly. The provided the reasons for other actors to accept the expectation and act accordingly, etcetera (van Lente, 1993: 87).

In other words, because industrialists and technologists were convinced by Moore’s claim, that decreases in the size of microchips would be persistent, they acted as if it was true and continued to fund research into the further miniaturisation of this technology. The prediction was thus brought into being (see also MacKenzie [1996] who offers a similar view on the history of the microchip). Importantly, neither van Lente nor MacKenzie suggests that technologies are a simple or direct *product* of promissory work.³ This is because we cannot presume stable trajectories and the continuation of existing sets of expectations (Fleck et al., 1990). As Jørgensen and Sørensen (1999) remind us, even where apparently stable sets of beliefs are shared by those perceived as the relevant actors, one cannot rule out the entry of other actors and factors into the arena. In such an environment, there is every opportunity for beliefs to be challenged and reworked in the arduous process of creating artefacts and making adequate linkages with the organisational and institutional practices of intended users. Various analytical frameworks within Science & Technology Studies (STS) have argued that the achievement of a new technology takes place in a heterogeneous landscape, involving a diverse and unevenly malleable array of human and nonhuman elements.

The most problematic aspect of discussions adopting the notion of a self-fulfilling prophecy is that it invites the interpretation that *any* vision if handled and communicated by enough reliable and trusted actors could become true. This is presumably the case for the most robust or insubstantial of fact or rumour. It is simply enough that people take-up a statement and that because the belief is widely shared by others then it makes little difference if the statement is informed or arbitrary, since because it is believed by everyone the world comes to resemble it (MacKenzie, 2006; Callon, 2007). This interpretation is still widely held but arguably found wanting because it does not deal adequately with the ‘content’ of expectations or the work involved in their ‘production’. What is at stake when we ignore the content and production of expectations is that it decries the idea that this type of knowledge has a valid base; it is also indifferent to the fact there are various levels of work involved in its construction. For instance, one of the concepts advanced to capture the presumably unsubstantiated status of

these kinds of knowledge claims is Rip's seminal work on 'folk theories'. Folk theories, he writes: "...are a form of expectations, based in some experience, but not necessarily systematically checked. Their robustness derives from their being generally accepted, and thus part of a repertoire current in a group or in our culture more generally" (2006: 349). Indeed, Rip describes the Gartner's 'hype cycle', a device used to map the rise and fall of hype surrounding emerging technologies, as an example of a folk theory. He notes that whilst it is highly influential it does not necessarily result from sustained forms of research:

Introduced by the Gartner Group as the hype cycle for information and communication technologies, it has become a folk-theory par excellence, because it is widely recognized, used to draw out implications, and *not an object of systematic research*. The visualization provided by the Gartner Group is widely referred to, and copied on websites...It shapes thinking about further developments and possible responses (2006: 352-3, *our emphasis*).

As we see it, there is a problem with the notion of a folk theory when applied to the work of industry analysts. It places undue emphasis on the acceptance of this knowledge as opposed to its production. This lends weight to the suggestion that these tools could be more or less arbitrary and they become influential primarily because of their diffusion. However, we think scholars need to be more precise here. We need to say something about the various effects expectations might have (be these strong, weak or even 'temporary' forms of influence). Not all expectations influence technologies in the same way. Why is this? Current templates give us the ability to differentiate between 'successful' and 'failed' claims – except perhaps by hindsight (Geels, 2007). This suggests that we need to reflect more carefully on the causal nature of expectations so as to be able to say something about their differential robustness and outcomes as well as acknowledge the forms of work involved in their production.

New Insights into Performativity

Some of these issues have been the subject of discussion within recent scholarship in Economic Sociology and the Sociology of Finance. Two strands in particular might help us conceptualise more fully the market for expectations. In his work on financial markets, for instance, MacKenzie's (2006: 16-18) seeks to investigate the influence of the Black-Scholes-Merton model on the derivatives market and has developed a typology of different types of performativity. According to MacKenzie there are those theories that when they are applied have no or little observable effect on a setting which he describes as 'generic' forms of performativity. There are those when applied that 'make a difference' in some way which he deems 'effective performativity'. There are those that bring about the 'state of affairs' for which they are a good 'empirical description' which he describes these - after the Sociologist of Science Barry Barnes - as 'Barnesian performativity', also noting how Barnesian

performativity has similarities with the notion of self-fulfilling prophecy. Finally, there are those theories that change economic processes so they conform *less* well to their depiction by theories which he describes as ‘counter-performativity’.

The second set of ideas is Callon’s (1998, 2007) attempt to recast the success of economic theory as a process of ‘world making’. He describes how theories emanating from the academy as ‘indexical’, meaning that they refer to particular circumstances, time and space. If these theories are to have influence they must create the context or, to use the term he prefers, ‘world’ to which they point. Successful theories are those able to create some form of ‘material reality’ or ‘obligatory point of passage’ that others are then forced to take into account. Those unable to mobilise their world will fail. Importantly this formulation draws explicitly on the idea from Actor Network Theory that agency is configured within a network of both human and non-human actors. To reflect this Callon (2007) describes the theories and the world they create as a *socio-technical agencement*. The latter term depicting a heterogeneous collection of material and technical elements that act on and adjust each other.

Both these ideas can be applied productively to the discussion of industry analysts. We find MacKenzie’s formulation useful as it provides for more precision when talking about the differential outcomes promissory work might have. Whilst not directly adopting his terminology, it is a practical inspiration for the *typology of promissory behaviour* developed below. Callon’s conceptualisation is valuable because it enables us to begin to discuss the forms of work involved in the production of expectations, which includes identifying their success and failure. That is, how certain kinds of promissory activities become obligatory points of passage (or not) for those working within technological fields.

The Market for Technological Expectations

The market for future oriented knowledge claims is a relatively recent phenomenon. It was only by the 1980s, for instance, that a few of the large management consultancy organisations began to collate and sell information about the new kinds of IT available. This was followed in the 1990s by the growth in popularity of specialist commercial research which gathered and traded information on vendors (Firth & Swanson, 2005). By the end of the 20th Century, however, we have seen the development and proliferation of a new, influential class of knowledge producer which has heralded in a much more elaborate system of consultancy and advice that attempts to subject vendor statements about new offerings to a more systemised and formalised evaluation (Pollock & Williams, 2009a,b). Today, these firms operate within a

lucrative and prosperous market. They have expanded their number from a small specialist group of players, primarily based in North America, to hundreds of such firms operating throughout the world (Hopkins, 2007). These firms are concerned to anticipate the evolution of a new technical field and of the business context which patterns their use and utility. This will include articulating and mobilising support for generic technological visions (with some analysts aligning themselves with specific vendor visions). However, and importantly, a large number of these will also be concerned to subject the promissory work of specific innovation players to a certain level of scrutiny and accountability. Here the work of these analysts is not in generating specific promises but in the differential circulation of promises and expectations mobilised by others. This will include the production of expectations based – and often critically-oriented – on assessments about vendors and their offerings.

Whilst clearly an important area there has still been little academic research conducted generally on the market for technological expectations or specifically on the role of industry analysts in organising new technological fields. The few preliminary studies existing to date come from mostly within Information Systems research (Mallach, 1997; Ramiller & Swanson, 2003; Firth & Swanson, 2005; Burks, 2006; Pollock & Williams, 2009a). Drawing often on a limited empirical base, STS scholars have tended to adopt a more avowedly critical view of industry analysts. Much of the writing has typically focused on the ‘simplistic’ nature of research (see particularly Bloomfield & Vurdubakis [2002]; Borup et al. [2003]; Rip [2006]). The case in point is the already discussed Gartner ‘hype cycle’ which is deemed to be ‘too general’, not allowing for ‘variation’ in technological evolution, and a tool that produces a ‘highly linear understanding of a technology’s path dependency’ (Borup *et al.*, 2006, 291-2). These are fair criticisms. However, there are alternative (and perhaps more productive) way to view this kind of knowledge and set of actors. This could be to attempt to understand the dual process of complexity and simplicity surrounding these tools. For instance, the more Callonian reading might be to understand the ways Gartner simultaneously engages with the market (and all its complexities) but is able to ensure that this complexity can be represented in a simple object. Then with how they construct the tool through the creation of a distributed network of actors but can at the same control and manage these actors. It is something of this nature that we attempt here.

Promissory Organisations

We seek to work up the notion of a promissory organisation because we think there is a lacuna in existing understandings of the market for future oriented knowledge claims but also

because it indicates a way of making sense of the twin key roles certain intermediaries play within marketplaces. This highlights how particular firms articulate generic visions of the evolution of a technical field and subject the promissory work of innovation players to scrutiny. We define a promissory organisation broadly as any form of intermediary that routinely and prodigiously produces future oriented knowledge claims. In explaining their significance, we suggest these intermediaries do not simply reflect or represent the state of affairs in a particular marketplace but actively contribute to its shaping in some way. Industry analysts operating within the IT sector are exemplary in this respect but there are clearly further examples in domains elsewhere. We anticipate promissory-type organisations are particularly found in sectors dogged by high levels of uncertainty and change (the life sciences, energy, health and environmental domains, and so on).

Promissory organisations have numerous characteristics of potential interest to those studying technological expectations. Latour (1987) has written that the modern scientific laboratory gains its strength as a place where diverse instruments are gathered together. Promissory organisations create themselves as centres of power through building a wide and variegated range of expectations as well as the organisational machinery for their production and communication. This includes the mechanisms and networks to develop and communicate ‘successful’ claims but also those needed to deal with more contentious, problematic and ‘failing’ forms of knowledge. One of the most interesting things about industry analysts is that they are prodigious in the writing of research. Many of the larger firms make dozens of claims about a vast range of innovations on a daily basis. This begs the question as to how such large-scale forms of envisioning are maintained. Moreover, whilst the popular conception is to see their assessments as constructed by single analysts and the vagaries of individual discretion, the empirical material reported here shows their research results from more observable social and distributed processes. In attending to this diversity of processes and outcomes of the business of expectations we argue the need for empirical analysis. In what follows we discuss three examples of promissory work produced by one large industry analyst organisation, but before doing so we provide detail on the means by which we have conducted our study.

Studying Promissory Behaviour

Studying industry analyst firms and providing evidence of their (differential) promissory influence is difficult. It is not only that these actors tend to be highly reserved and reluctant to discuss the detail and provenance of their research but that they conduct their work both

within and *across* various organisational spaces. One often has the sense when researching these firms of not being in the right place at the right time (a frequent problem for social science research into complex developments, see Law [1994] and Magolda [2000]). Important decisions or discussions appear to be taken elsewhere. Thus in terms of understanding the differential influence of industry analysts, we have had, by necessity, to be eclectic in terms of research design. Rather than study industry analysts in one socially/temporally bounded locale, we have tracked their influence in differing contexts and across different issues. Our study was designed as much through opportunism and ‘luck’ as through theoretically informed choices. Gartner was one of the ‘surprises’ we came across whilst conducting research on the acquisition, design and use of large packaged software systems and once aware of their importance we attempted to study them whenever or wherever we could. This meant, we studied those places where we could negotiate access (and a difficulty with access is one reason for the relative paucity of studies) but also sought out particular sites. These choices, of course, were constantly being modified to address new phenomena and issues as they arose.

This paper presents three ‘vignettes’. We were initially introduced to the influence of Gartner whilst one of the authors of the paper was conducting participant observation research on the procurement of an IT system within a local government office in England. During this time, which lasted for almost a year, we viewed Gartner’s influence from the point of view of those who consume this type of knowledge. We were able to observe (and collect material about) the influence of Gartner’s recommendations and research whilst the procurement team debated the pros and cons of various solutions. We then came across Gartner’s influence a few years later whilst conducting a further study on the design of large packaged software systems. Here we were able to observe how Gartner sought to construct one of its research documents (the Magic Quadrant). The final episode we present stems from our choice to attend international IT conferences and venues where we knew Gartner to be present, our aim being to observe Gartner’s interactions with the various other interests and participants gathered there.

Infrastructural Knowledge: Promissory-work Made Durable

The first vignette relates to how Gartner classify new developing technologies. We see classification as one particular powerful way in which industry analysts shape innovation because technologies are named in the anticipation that they will develop along a certain trajectory, take on a particular shape, that new players will enter the market, and that demand

for the technology will continue to grow, and so on. Importantly, and a further reason why we might think of classification as a form of promissory work, is that it is not unusual for attempts to classify the characteristics of new technology markets to ‘fail’. Anticipated markets do not always emerge in the way envisioned. In this sense, technological classifications are similar to the ‘organising visions’ identified by Swanson & Ramiller (1997) in that they are subject to varying levels of support and momentum. However, if successful, it is also highly likely that classifications become something of an ‘infrastructure’ (in the way that Bowker & Star [1999] describe those resources that sink into the background and only become visible only upon breakdown). We encountered the operation of this kind of infrastructural knowledge in observing the influence of Gartner in an ethnographic study we undertook of the procurement of a complex information system by a local authority.

The New Category of ‘CRM’

‘Melchester Council’ (a pseudonym) is choosing a customer relationship management system (CRM) system as part of its e-government agenda. This is a system that today is a required feature of organisational landscapes but when the fieldwork was being conducted was still shrouded in uncertainty concerning its necessity and shape. The procurement has been a protracted affair and to speed things up Melchester has engaged the services of the Gartner Group to provide background information on the suitability of one particular vendor that had emerged as the favourite. ‘NewVendor’ (a pseudonym) has done particularly well in its sales pitch and had the support of various staff from the Council. However, there appeared to be some issues still to be resolved. The most pressing was that no one from Melchester had previously heard of NewVendor – and this lack of knowledge was causing uncertainty within the procurement team. There were fears about committing such an important project to an ‘unknown quantity’. One apparently easy way to settle this seemed to be to ask Gartner to provide a ‘vendor rating’.⁴ A Melchester IT manager (Ron) duly telephoned Gartner but was surprised to be told by an analyst specialising in CRM (someone called ‘Ed’) that he could not provide any details on NewVendor because no one in the UK office of Gartner had *heard of them!* This analyst said he would cross check with US based colleagues and call back. He did so a few days later but only to report how NewVendor were also unknown to his American colleagues. The IT manager circulated notes of the telephone conversation amongst the procurement team:

Ed has been in touch with his colleague in the USA, but [NewVendor] were unknown to him as well. Gartner can therefore not provide any research papers into the company or its products (IT Manager’s circulated notes).

Some days later the particular Gartner analyst writes to the Council summarising the telephone conversations and drawing the following conclusions:

As a follow-on call we checked with two different CRM analysts in the U.S. Both belong to the call centre team and neither had heard of [NewVendor]. They take about 400-500 calls from clients per year. One focuses on call centre applications and the other on call centre infrastructure...

The Bottom Line is that...we do not believe the [NewVendor] proposal is necessarily in the best interests of [Melchester] (letter from Gartner).

What we see here is that Gartner cast doubt on NewVendor's standing - going as far as to suggest that Melchester should reject this vendor. The episode does not finish there but takes an interesting turn when NewVendor, informed of Gartner's opinion, attempt to play down its significance by suggesting that the problem results from a 'categorisation' difficulty:

Their [NewVendor's] comment when it was pointed out that they were unknown to Gartner was that in the two years the company has been in existence it has not spent any time or effort in making itself known to industry analysts. This is because at present these companies do not have a category for what they are offering (the integrated framework approach) (IT Manager's circulated notes).

According to NewVendor the problem resides with Gartner's classification of the CRM market which is not wide or flexible enough to include the kind of services they offer. They describe how they are promoting a so called 'integrated framework approach'. To provide evidence of this they send to the Council a list of how their offering differs from the more conventional kind of CRM covered by Gartner. Gartner respond by pointing out how a number of other more established CRM providers are *already* offering the kind of innovation described by NewVendor. What follows however is then a complex and lengthy discussion between Gartner and NewVendor about the nature of CRM and the classification process.

Meanwhile the Melchester team are increasingly confused. They decide the best way forward is that if no vendor briefing of NewVendor exists then the easiest thing is to ask Gartner to carry out a rating on their behalf. Thus, a US based Gartner analyst meets with NewVendor a couple of week later. In contrast to the first account, this analyst presents a somewhat more nuanced reading of the episode – emphasising how NewVendor potentially has a 'broader offering' that does not necessarily 'fit' within Gartner's view of CRM. Indeed the analyst told the Council that she was 'impressed' by NewVendor, especially their 'knowledge of their marketplace and their understanding of software evolution' (IT Manager's circulated notes). She concludes by advocating that Melchester should perhaps 'not read too much into the fact they were not known to Gartner' (IT Manager's circulated notes).

This begs the question as to how all of this is read back at the Council. However, amongst the procurement team there was little doubt about what all this meant – certain members had become highly sceptical of NewVendor and were marshalling support from others so as to reject this vendor (see Pollock & Williams [2007] for a more detailed discussion). Shortly after the discussion with Gartner, NewVendor is *sifted from the table*.

To summarise, we have seen how Gartner were attempting to draw the boundary around what was at the time an unstable technology (a form of boundary work for which Gartner is well known). We might suggest this process of categorisation does not simply allow industry analysts to represent the market/technology but also shape it. Gartner control their definitions preferring vendors to conform to existing ones rather than create new ones. Those outside the classification – those who do not conform to Gartner's definition - are seen as anomalies (Zuckerman, 1999; Beunza & Garud, 2005). Indeed, in the case described, the vendor was not able to enter this particular marketplace. Thus, we see how this kind of infrastructural knowledge has a significant and enduring influence on the marketplace. It demonstrates a strong form of performance. We might describe technology and market classifications as *promissory work made durable*.

Visions Let Loose

This second vignette investigates the intriguing issue of how those who trade in future based knowledge claims manage 'failure'. One might imagine these organisations have mechanisms for downplaying claims found to be inaccurate. This also begs the question as to what effect failure has on reputations and credibility (cf. Brown, 2003).

Demonstrations of Failure

Purely through chance we stumbled across a forum where Gartner dealt with failure in the most public of settings: in front of an audience of over 200 practitioners attending an annual international industry IT conference. One of the authors of this paper was sitting listening to a Gartner analyst give his keynote address, a talk he gave each year to this particular conference, when he pointed out how he wanted to do things a little differently this time around:

What I have decided this year, because several of you have said, 'You know it would be fun to take a look at some of the stuff you have said over the years, and if it makes sense today, or, if it doesn't make sense. Or what it was, and what we talked about over that period of time'. So I went back even pre-Gartner when I was at CAUSE and picked out some of the slides. And I thought that I would start from about 1992, partly because that's as early as my Power Point slide went back, I didn't have anything that was in a form that I could use.⁵

What he proposes to do is go through claims previously made to see whether they turned out to be ‘accurate’ or not! He then sets about reading through old power point slides pointing out the prediction made and continually stopping to insert anecdotes as well as to invite the audience to confirm the claims veracity through raising their hands. The first claim is about e-learning and future of traditional higher education:

In my first year at CAUSE some of you asked ‘What are some of your recommendations and some of your strategic planning assumptions? What do they look like?’. Here is some of them from 1996. That’s really 10 years ago now.

‘By 2001 distance learning will be a mainstream activity on 80% of the campuses’.

How many of you think that one has come to pass? How many of you [very few hands raised]. How many of you think it hasn’t yet [many more hands raised]. Mainstream activity? Still not. OK.

With the first slide most of the audience appear to agree that the analysts’ prediction has *not* ‘come to pass’. At this, he pauses for a few seconds, before re-launching with a slightly different point:

How many of you though have a large percentage of either hybrid or blended courses on your campuses today? [A few more hands are raised]. Yeah. OK. So part of it is coming there....

From this he addresses his next prediction that ‘Western Governors University would have a dramatic impact upon higher education’. However before handing this claim over to the audience, he prefixes his point by asking:

How many of you *remember* Western Governors University? [Laughter amongst audience]
Oh, yes! Oh, yes! [More laughter].

The Western Governors University, like many of the other new for-profit virtual universities at the time, was largely a failure (Cornford & Pollock, 2003). Bob’s acknowledgement of this and seeming irreverence towards his prediction is greeted with much amusement among the audience. He continues:

Western Governors Association Initiative. At that time I was on the task force for the Western Governors, and I tell you, if you ever want to see panic in Presidents’ eyes, this one brought it about. The Western Governors, the idea that you have this group of states coming together in the form of a virtual university, *really* did have the attention of a lot of people. And I remember Presidents coming up to me and saying ‘Am I really going to find myself in a situation where I am going to have to compete with universities around the world?’

These institutions did not have the direct influence that Gartner predicted but this does not deter Bob from qualifying and defending his claim through pointing to the wider effects they did have:

The point is, Western Governors started to shake thing up. And at the time of this particular Gartner and EduCause update I said ‘If they never offer a course, Western Governors will be successful because they will have shaken up higher education to start thinking about

technology and the role of technology in teaching and learning'. And I think that is true. The reality is that they haven't done too much from the point of view of offering course work and becoming an institution, although they were accredited.

From then on his presentation begins to follow a familiar pattern. We are introduced to a past claim: "IT coupled with better business practices and co-operative arrangements can bring about both cost avoidance and significant savings". The analyst then ironises the claim: "Any of you *seen* any significant savings..." [laughter]. "How about cost avoidance?". Having questioned the claim's veracity he then attempts to convince the audience that the prediction contains elements of truth: "Sometimes, yeah, we have. And there I have to say there are times when people see savings. The problem I find is that as we have done some of these savings *we* [the IT community] don't get credit for them".

This episode is interesting because the audience is invited to evaluate Gartner's research and to look at what they said *would* happen as compared with what *actually* happened. Gartner are airing their claims for scrutiny 'after the event' so to speak. Of course the particular analyst skillfully manages this process so that the fragilities surrounding this form of promissory work are never fully exposed and claims are not strongly contested. Rather, in some respects, he attempts to recast the claim with the present day so that both prediction and present are more closely aligned. We might read this episode, following Brown and Michael (2003), as a set of unrealistic promissory activities that are later discursively re-adjusted to match the setting and vice versa – a process they describe as 'retrospecting prospects'. However, while such a conclusion might be valid, we think the episode highlights a different point.

Callon (2007) has argued that theories are performative when they successfully bring about the 'world' to which they point; they create some form of 'material reality' or 'obligatory point of passage' others are forced to take into account. Applying this notion to this vignette, for instance, we might say that promissory work does not exist in isolation but has meaning and effect in the world it creates for itself. Successful promissory work would be actively engaged in the constitution of reality to which it points. However, in this case, Gartner appeared to neither build on nor defend this knowledge but simply let the claim go. Thus we might say that promissory organisations sometimes produce and communicate a kind of knowledge which they never attempt to do anything with. The performative reading of this is that some types of expectations based knowledge have limited or 'temporary' effects. These expectations are simply launched into the ether - they are *visions let loose*.

Statements and their World

In this final vignette we turn our attention to a device called the ‘Magic Quadrant’. This has been developed by Gartner to compare technology vendors against each other according to a mix of present day and future based criteria. The aim is to provide information to IT decision makers concerning intangible issues regarding the current and future performance of technology vendors (will they be around next year?), their behaviour (will they continue to invest in the market?), their understanding of the marketplace (do they know what users’ want?), and so on. Coming in the form of a 2 by 2 matrix it ranks vendors according to two specific Gartner developed measures: a vendor’s ‘completeness of vision’ and its ‘ability to execute’. Depending on Gartner’s assessment of these features, the vendor is then placed in one of four boxes (labelled ‘niche player’, ‘challenger’, ‘visionary’, or ‘leader’) (see Figure One).

Figure One about here

The Magic Quadrant is interesting to study as a form of promissory work because it is what might be thought of as a ‘dividing object’: it is widely contested but also highly influential (Pollock & Williams, 2009a). It has been described as the most ‘influential tool’ in the IT marketplace: a high ranking is said to guarantee a vendor more attention than rivals (Hind 2004); some argue that it has the power to ‘make or break’ a new technology, to create winners and losers (Violino & Levin, 1997). However, at the same time, it also has been denounced as devoid of ‘intrinsic value’; it has been called a mere ‘marketing tool’ (Howard, 2004); it is said to be overly ‘subjective’ in the way compiled, leading to accusations of ‘partiality’ and ‘bias’ (Cant, 2002); and there have been various critical discussions with respect to the limitations of the measures used for analysis (Columbus, 2005). This begs the question as to how Gartner has been able to build up such a large audience for this type of promissory work. We suggest the tool is influential because it is (re)configuring the technological field. In particular, we argue that Gartner are actively creating a new ‘world’.

Setting Out a New Terminology

To give some indication of the new world the tool is setting out we present an extract from a presentation given by one Gartner analyst to a large audience of IT practitioners. He is talking about the history of decision making within information systems procurement and begins by discussing how previously technology adopters had assessed information systems prior to purchase:

...we put together [in the 1990s] an outline of how you should evaluate administrative applications...[A]nd what we said was that in a stable environment you would look at '*functionality*' ...

What we said in '97 was change. You need to look at *functionality* but most vendor packages are mature enough to where there is at least common functionality, so it is a matter of *goodness of fit* that you are looking at... (*our emphasis*).

Here we see the problematisation of the traditional means by which people assess information systems (this move from 'functionality' to 'goodness of fit'). His critique focuses on the assessment criteria people currently use which, as he sees it, are no longer effective in sorting vendors out. He goes on to suggest:

And we started seeing that trend in the early 80s...that said we had ageing of systems, people were using these systems... And the point is that you had to look at buying software as being a *partnership* with a vendor, and that's a long-term relationship. It's not something short term (*our emphasis*).

The analyst also thinks it has now become necessary to replace current assessment measures as adopters tend to use the same solution for longer and as a result have 'partnerships' with suppliers. The implications of this being that organisational consumers need to assess not only systems but also increasingly vendors themselves:

And so, the *vision of the company* - do they understand the business of [specific sector]? Do they know where you were going? - and the *ability to execute*, those are still crucial. We still say it is about half of what your criteria should be... (*our emphasis*).

The analyst is suggesting a shift in decision making from the evaluation of functional and local concerns to more 'strategic' ones. In order to do this, he mentions how a consumer might apply Gartner's own evaluation criteria ('ability to execute' and 'completeness of vision') when evaluating vendors. In this respect, it might be suggested that the Magic Quadrant is transformative – that Gartner are setting out a new way to evaluate vendors. However, the world that Gartner are attempting to set out also requires a research process. This turns out to be one of the most controversial aspects of the tool.

Constructing a Research Process

Gartner analysts produce new Magic Quadrants for a particular markets or sub markets each year - and each year a vendor's position will be 'reassessed'. Gartner say that they collect evidence for their ranking from a variety of sources which includes research on vendors as well as discussions with the users of the technology. These latter groups are the customers of the vendors under analysis and Gartner's relationship with these people is particularly interesting. We observed how one particular analyst had built up and was managing a large network of people with whom he interacted on a regular basis. These people would

continuously feed-back information and opinion to him on the particular vendors they were working with. Based on our fieldwork, we observed how a vendor ranking is enacted within these interactions. We describe this network and the various interactions that go on within it, following Callon & Muniesa (2005), as a ‘calculative network’.

At a conference, for instance, one of the authors was sitting conducting an interview with an IT manager when a Gartner analyst approached. The analyst who had been interacting with the IT manager for some months about the current performance of a software vendor we call ‘SoftCo’ begins to tell him how he has just heard that SoftCo were already having difficulties with another user organisation (UserOrg):

Analyst: Chris [from UserOrg] and I were just talking, she’s, she has put some ultimatums out with them [SoftCo].

IT Manager: Yeah, the real problem with them, [UserOrg], is that they have always written their own systems and they have gone for BoB [best of breed] but when they start hitting sort of a PeopleSoft or a [SoftCo] they think that it is going to be straightforward....So, so she has got problems?

Analyst: She said that they are 2 million pounds over budget and they haven’t *even* started implementation.

IT Manager: Oh, I think that a lot of that is going be, the guys from [SoftCo], the ones that I have been talking to. It is just that the account manager of the [nationality] is bloody useless.

Analyst: But that is a key...

This interchange is interesting because the Gartner analyst begins the conversation by highlighting SoftCo’s failings through invoking a kind of ‘community’ view (it was not him but Chris from UserOrg criticising SoftCo). In contrast, the IT manager attempted to defend SoftCo through shifting the focus back onto UserOrg’s lack of experience with these kinds of large generic software packages. He also suggested that things were improving since SoftCo has just recruited ‘some really good people’. This exchange went on for some in this manner with both providing contrasting evidence. The IT manager was forcing the analyst to both explain and defend his assessment of SoftCo, which the analyst appeared able to do and *in a robust manner*.

Defending the New World

We are arguing that Gartner is feeding these informal exchanges - what might be thought of as ‘community knowledge’ - back to the market. However, these kind of ‘judgements’ are not easily objectified (Porter, 1995). For instance, during fieldwork we noted how Gartner often struggled to account for the provenance of community knowledge and how there was a certain amount of ambiguity surrounding the methodological status of the tool. In its early career, for instance, we found the more ‘quantitative’ aspects of the tool highlighted whereas in later years it is described as resulting from more qualitative type research. Today it is described as

having a mix of both ‘objective’ and ‘subjective’ aspects (Soejarto & Karamouzis, 2005: 5). When Gartner say the tool includes ‘subjective criteria’ we understand it to mean it is shaped through analyst interactions with this wider community. Incorporating this kind of knowledge presumably increases the tool’s credibility, through giving weight to the argument that Gartner are close to practitioners, but it has also led to accusations of ‘partiality’ and ‘bias’. Indeed, the issue of ‘bias’ was an aspect voiced several times to us during fieldwork. It was, for instance, the focus of an email exchange between one SoftCo Solution Manager and a customer:

Up to now I perceived their [...] chief analyst being pretty vain - it is hard to turn his mind around just by facts. For the last Magic Quadrant we proved him being wrong in every single sentence of his comments to his (bad) assessment of [SoftCo], but I believe this has made him more negative about [SoftCo] than before (email from SoftCo to IT Manager).

One of the most striking features of these criticisms is their identification of ‘authorship’. Gartner are a large global organisation but nonetheless our informants identified one particular analyst as the source of ‘negative’ assessments. We mention this because it contrasts with the strategies Gartner are employing in an attempt to ‘objectify’ their knowledge. Whilst certain actors highlight the particularised nature of expertise, Gartner themselves are pushing in the opposite direction through attempting to demonstrate how these tools result not from individual but ‘collective’ almost ‘academic’ forms of expertise. For instance, in an interview, a Gartner analyst described to us how Gartner were strongly committed to certain scholarly principles:

We are pseudo-academic in the way we work. We have a very rigorous peer review. So if I write something, it takes me 42 days to get it out the door. I can’t just write something, I can write it in a blog if I want, that is fine, but anything that is published within Gartner, I have to have two peer reviews followed by a manager, not a manager but a peer mandatory review, it is the kind of leader of that area who has to review. Then it goes up to a team manager, and then we can get down to things like editing etcetera. And if it is something real big and controversial then it will go through much more reviews like that. So up to 16, 17 different individuals will review it, give you feedback on it and kick it to bits... (author interview with Senior Gartner Analyst).

Notions like ‘peer review’, ‘research methodologies’, ‘data collection’ and so on are an increasingly common aspect of the vocabulary of industry analysts.

To summarise, we have shown how this form of promissory work has a strong but contested influence on the marketplace. Indeed the principal contention pursued here is that the Magic Quadrant has become ‘successful’ because it is (re)configuring the technological field. In particular, we argue that Gartner are actively creating a new ‘world’, which includes a new terminology that has changed how vendors and others conceive of IT procurement. This

world includes a research process whereby Gartner can speak ‘authoritatively’ about the capacities and potential of IT vendors. Importantly, and even though their assessments are contested, Gartner appear able to defend this kind of knowledge. This is through actively defending the rankings and the research process that sits behind them.

Conclusions

The *business of technological expectations* is increasingly commercial in orientation, product minded in ambition and potent in influence. Crucially, whilst there has been extensive research on the efforts of scientists and technology developers to mobilise *particular expectations* around proposed technical advances there has been rather little attention given to the intermediary organisations now dedicating themselves to the production, communication and selling of expectations-based products and services. We focused on the case of industry analysts who routinely produce various types of future oriented knowledge that has consequences for the shaping of markets and products. We have termed these actors *promissory organisations* to capture how they are successful in mobilising support for *generic* promises and visions (deploying signposts about the state of the industry and its future evolution) but also increasingly in ‘organising’ expectations within procurement and innovation markets (subjecting the *particular* promissory work of innovation players to a certain level of scrutiny and accountability). In a context of growing competition between diverse technology suppliers, articulating claims about the current performance and further development of their highly complex products, which are extremely difficult for potential adopters to assess, promissory organisations’ serve to regulate and systematise that competition. The increasing influence of this kind of intermediary is changing the nature and dynamics of the promissory space.

Whilst the more substantive aims of the paper are to throw light on how industry analysts shape innovation and markets, our theoretical goals are to understand the extent to which their advice is ‘performative’. How does this form of promissory work ‘nudge’ the direction of innovation and procurement choices? Arguably, current frameworks developed within sociological research on expectations do not allow us to answer this in the comprehensive and nuanced manner necessary. Emerging technologies analysed through the notion of a self-fulfilling prophecy run the risk that they are seen as a direct *product* of expectation (van Lente, 1993; Guice, 1999; Brown et al., 2000; Brown et al., 2003; Rip, 2006). Yet scientific and technological visions rarely demonstrate simple kinds of performativity. Even if seemingly stable sets of beliefs are shared by relevant actors, one cannot write out the

possibility of other actors and factors entering the field (Jørgensen & Sørensen, 1999). Scholars need to ask, and this relates to a larger question about the nature and significance of technological expectations more generally, why some kinds of consensus or compelling vision come into being and are materialised and others not. Clearly not all expectations constitute innovation in the *same* way. Why is this? Why do certain forms of promissory work appear to be more successful? These kinds of consideration underpin our insistence of the need to develop complex analytical registers for systematically tracking expectations with respect to their complicated and highly uneven levels of performativity. Richer analytical templates and rigorous methodologies are required. The research challenge here concerned whether it is possible to construct a *typology of promissory behaviour* that characterises the unevenness of these commoditized forms of expectations.

Inspired by frameworks emerging from Economic Sociology and the Sociology of Finance, we identified within our empirical research at least three different kinds of promissory work (see Table One). First, *infrastructural knowledge*, which is typically but not exclusively attempts to classify technology markets. This includes definitions of the technological field and the mapping of players within that arena. These classifications are institutionalised - meaning they exert a powerful and enduring influence on technological markets. They endure because they are rendered invisible in the way Bowker & Star (1999) describe 'infrastructure' (as visible only upon breakdown). Secondly, we find more transitory forms of intervention that might be described as *visions let loose*. These are typically provocative signposts drawn up about the state of the industry and future developments. These kinds of predictions appear not to be built in the same careful way as other kinds of research but simply 'launched into the ether' with resulting relatively short lived levels of influence. Finally, there are what we have identified as *statements and their world* to describe where actors generate assessments of the relative location and potential of various suppliers within the product market for different user sectors. Here analysts' attempt to make their research successful. As such, because of the active world-building conducted, these statements have a relatively strong but contested influence on the market.

Table One about here

We note also how different types of promissory work are subject to variegated forms and standards of accountability and verification. *Infrastructural knowledge*, for instance, advances in a slow and careful manner because here actors are attempting to define the technological field (in some cases, to say what the next generation of technologies will look like) and to

organize change in the marketplace. It is a form of boundary work where analysts attempt to categorize technology vendors and markets in a very material way, according to existing classifications, which has the result that they may be blind to those that do not neatly fit their categories (Beunza & Garud, 2005). Here assessments are ‘authoritative’. Whilst they could be (and often were) challenged, analysts tended to stick to original classifications (doing otherwise could diminish credibility – see Zuckerman [1999]). Similarly, *statements and their world* bring about ‘accountable’ change. This form of research has to be accountable because it produces ‘winners and losers’. Industry analysts are attempting to be categorical about which is the right technology to buy based on assessments of the current and future potential behavior and competences of vendors. *Visions let loose*, by contrast, are speculative and appear not to be subject to the same levels of rigorous accountability as other kinds of promissory work. In other words, what we have shown is that there seems to be a spectrum of promissory activity. At one end we find promissory work that is researched and defended robustly and which appears to ‘matter’ to promissory organisations and the various others who use it. At the other end, we found very different kinds of promissory work, which looked more like ‘provocations’ attempting to capture interest. Intriguingly, the failure of provocations appeared to be relatively unimportant. It might be speculated that they do not (at least explicitly) damage reputation in the way some have argued (Brown, 2003). To the contrary, we found there were public spaces and occasions where mistaken predictions could be openly discussed!

We sought to answer *empirically* the question as to why certain kinds of promissory activities fail or succeed but we do not necessarily think it an issue that can only be assessed empirically or, more importantly, in *hindsight* (which tends to be the implication from sociological work on technological expectations). What we are arguing for is an empirical programme on the business of expectations, but with a view to creating a typology of promissory behaviour. We have identified at least three types of promissory behaviour (but there will certainly be others - meaning a more complex typology could be developed). To be clear, the aim of such a typology is not to improve our ability to decide on the accuracy of promissory work. We are not suggesting that the particular mode of analysis developed here provides us with privileged access to the future (Barben et al., 2007). *It does not*. Notwithstanding this, however, it may still allow us to say something about the promissory process (Geels, 2007). This includes providing insights into the different moves and strategies by which promissory organisations work, which, in turn, could provide an understanding into

the potential strength or weakness, robustness or fragility of particular claims; the upshot being that it allow us to delineate certain of the things underpinning their success or failure (Barden et al., 2007; Geels, 2007). This perhaps can be seen most clearly in terms of the ‘webs of accountability’ identified above. Surrounding certain claims (*statements and their world* for instance) there appear to be dense arrays of knowledge linking players together as well as formalized and highly distributed processes by which data is gathered (resonating with what Callon & Muniesa [2005] have referred to as a ‘calculative network’). Moreover, this formal process is increasingly exposed to external scrutiny and comment. Whilst clearly not subject to the strict controls of independent ‘scientific’ or ‘academic’ knowledge, this kind of assessment does have its own particular forms of accountability that deserves further study. Alternatively, compared to *visions let loose*, this reveals a much less dense web of accountability and fragile links with little in the way of defensible knowledge.

Future Areas for Research

We have called for more light to be thrown on the business of technological expectations. We speculate that in a context of accelerating technological innovation, that gives new challenges and uncertainties to potential innovators or adopters, and where the normal processes of decision making are deemed to be inadequate, there will be a growing number of promissory-type organisations attempting to organise the future in some form. Clearly not all these will influence innovation in the same way; only a small number will produce research that is seen to be accurate; only some will generate assessments that end up being performative. There is therefore a need for scholars to develop the analytical tools and frameworks to allow researchers to carry out a systematic and sophisticated study of their influence. Our work suggests we may need to address a possible *spectrum of promissory organisations* with, at one end of the scale, powerful bodies (like industry analysts) which explicitly see themselves as organising promises, whilst at the other end actors and organisations which may be less central and may not necessarily even recognise their promissory role as such.⁶ We have produced a study covering one part of the spectrum, where one group has managed to command the centre of attention but there are many other kinds of promissory-type organisations deserving of study.

References

- Barben, Daniel, Erik Fisher, Cynthia Selin & David Guston (2007) ‘Anticipatory Governance of Nanotechnology: Foresight, Engagement, and Integration’ in E.Hackett, O.Amsterdamska, M.Lynch & J.Wajcman (eds), *The Handbook of Science and Technology Studies*, 3rd Edition (Cambridge, MA: MIT Press).

- Beunza Daniel & Raud Garud (2007) 'Calculators, Lemmings or Frame-makers? The Intermediary Role of Securities Analysts' in M.Callon, Y.Millo & F.Muniesa (eds), *Market Devices* (Keele, UK: Blackwell Publishing/The Sociological Review).
- Bloomfield, Brian & Theo Vurdubakis (2002) 'The Vision Thing: Constructing Technology and the Future in Management Advice' in T.Clark & R.Fincham (eds), *Critical Consulting* (Oxford: Blackwell).
- Borup, Mads, Nik Brown, Kornelia Konrad & Harro van Lente (2006) 'The Sociology of Expectations in Science and Technology', *Technology Analysis & Strategic Management*, 18, 3-4: 285-98.
- Bowker, Geoff, & Susan Leigh Star (1999) *Sorting Things Out: Classification and its Consequences* (Cambridge, MA: MIT Press).
- Brown, Nik (2003) 'Hope Against Hype: Accountability in Biopasts, Presents and Futures', *Science Studies*, 2: 3-21.
- Brown, Nik, Brian Rappert & Andrew Webster (2000) 'Introducing Contested Futures: From Looking into the Future to Looking at the Future' in N.Brown, B.Rappert & A.Webster (eds.) *Contested Futures: A Sociology of Prospective Science and Technology* (Aldershot, Ashgate).
- Brown, Nik & Mike Michael (2003) 'A Sociology of Expectations: Retrospecting Prospects and Prospecting Retrospects', *Technology Analysis and Strategic Management*, 15, 1: 3–18.
- Burks, Tom (2006) 'Use of Information Technology Research Organisations as Innovation Support and Decision Making Tools', Proceedings of the 2006 Southern Association for Information Systems Conference.
- Callon, Michel (1998) 'An Essay on Framing and Overflowing' in M.Callon (ed.) *The Laws of the Markets* (Oxford: Blackwell).
- Callon, Michel (2007) 'What Does it Mean to Say that Economics is Performative?' in D.MacKenzie, F.Muniesa & L.Siu (eds) *On the Performativity of Economics: Do Economists Make Markets* (Princeton: Princeton University Press).
- Callon, Michel & Fabian Muniesa (2005) 'Economic Markets as Calculative Collective Devices', *Organisation Studies*, 26, 8: 1229-250.
- Cornford, James & Neil Pollock (2003) *Putting The University Online: Information, Technology & Organisational Change* (Milton Keynes: Open University Press)
- Firth, David & E. Burton Swanson (2005) 'How Useful are IT Research and Analysis Services?', *Business Horizons*, 48:2, March/April: 151-59.
- Fleck, Jamie, Juliet Webster & Robin Williams (1990) 'The Dynamics of IT Implementation: A Reassessment of Paradigms and Trajectories of Development', *Futures*, 22: 618–40.
- Gartner (2000) 'Higher education and the Magic Quadrant process', Gartner Research, 3 January, ID Number: M-09-9829.
- Geels, Frank & Wim Smit (2000) 'Failed Technology Futures: Pitfalls and Lessons From a Historical Survey', *Futures*, 32, 9-10: 867-85.
- Geels, Frank (2007) 'Feelings of Discontent and the Promise of Middle Range Theory for STS: Examples from Technology Dynamics', *Science, Technology & Human Values*, 32: 627-651.

- Gregory, Judith (2000) 'Sorcerer's Apprentice: Creating the Electronic Health Record, Re-Inventing Medical Records and Patient Care', unpublished doctoral dissertation, Department of Communication, University of California San Diego, San Diego.
- Guice, John (1999) 'Designing the Future: The Culture of New Trends in Science and Technology', *Research Policy*, 28, pp: 81-98.
- Hind, P. (2004) 'Self-Fulfilling Prophecies?', *CIO*, 12th July. Available online: <http://www.cio.au/pp.php?id=885195886&fp=4&fpid=1854618785> (accessed 29th March 2006).
- Hopkins, William (2007) *Influencing the Influencers: Best Practice for Building Valuable Relationships with Technology Industry Analysts*, Austin, Texas: Knowledge Capital Group.
- Howells, Jeremy (2006) 'Intermediation and the Role of Intermediaries in Innovation', *Research Policy*, 35, 5: 715-28.
- Jørgensen, Ulrik & Ole Sørensen (1999) 'Arenas of Development: A Space Populated by Actor-worlds, Artefacts, and Surprises', *Technology Analysis and Strategic Management*, 11, 3: 409-29.
- Latour, Bruno (1987) *Science in Action: How to Follow Scientists and Engineers Through Society* (Cambridge, MA: Harvard University Press).
- Law, John (1994) *Organizing Modernity*, Oxford: Blackwell.
- MacKenzie, Donald (1996) *Knowing Machines: Essays on Technical Change* (Cambridge, MA: MIT Press).
- MacKenzie, Donald (2006) *An Engine, Not a Camera: How Financial Models Shape Markets* (Cambridge, MA: MIT Press).
- MacKenzie, Donald (2009) *Material Markets: How Economic Agents are Constructed* (Oxford: Oxford University Press).
- Magolda, Peter (2000) 'Being at the Wrong Place, Wrong Time: Rethinking Trust in Qualitative Inquiry', *Theory Into Practice*, 39, 3: 138-45.
- Mallach, Effran (1997) 'Vendor Support of Industry Analysts', *Telematics and Informatics*, 4, 2: 185-95.
- Michael, Mike (2000) 'Futures of the Present: From Performativity to Prehension' in N.Brown, B.Rappert & A.Webster (eds.) *Contested Futures: A Sociology of Prospective Science and Technology*, Ashgate: Aldershot.
- Pollock, Neil & Robin Williams (2007) Technology Choice & its Performance: Towards a Sociology of Software Package Procurement, *Information & Organisation*, 17: 131-61.
- Pollock, Neil & Robin Williams (2009a) The Sociology of a Market Analysis Tool: How Industry Analysts Sort and Organise Markets, *Information and Organization*, 19: 129-51.
- Pollock, Neil & Robin Williams (2009b) *Software & Organizations: The Biography of the Enterprise-wide System or How SAP Conquered the World* (London: Routledge).
- Porter, Theodore. (1995) *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, Princeton (New Jersey: Princeton University Press).
- Ramiller, Neil & E. Burton Swanson (2003) 'Organizing Visions for Information Technology and the Information Systems Executive Response', *Journal of Management Information Systems*, 20, 1: 13-50.

- Rip, Arie (2006) 'Folk Theories of Nanotechnologists', *Science as Culture*, 15, 4: 349-65.
- Soejarto, A., F., Karamouzis, K., Parveen & M. von Uechtritz (2007) 'Magic Quadrant for ERP Service Providers, North America, 2007', 18 September, Gartner RAS Core Research Note G00150514.
- Stewart, James & Sampsa Hyysalo (2008) 'Intermediaries, Users and Social Learning in Technological Innovation', *International Journal of Innovation Management*, 12, 3: 295-325.
- Stewart, James (1999) 'The Web Meets the TV: Users and the Innovation of Interactive Television' in C. Toscan & J. Jensen (eds) *Interactive Television: TV of the future or the future of TV?* (Aalborg: Aalborg University Press).
- Swanson, E. Burton. & Neil Ramiller (1997) 'The Organizing Vision in Information Systems Innovation', *Organisation Science*, 8, 5: 45874.
- van Lente, Harro (1993) *Promising Technology: The Dynamics of Expectations in Technological Developments* (Amsterdam: Proefschrift).
- van Lente, Harro & Arie Rip (1998) 'Expectations in Technological Developments: An Example of Prospective Structures to be Filled in by Agency' in C. Disco & B. van der Meulen (eds) *Getting New Technologies Together* (Berlin: Walter de Gruyter).
- van der Meulen, Barend & Arie Rip (1998) 'Mediation in the Dutch Science System', *Research Policy*, 27: 757-69.
- Violino, Bob & Rich Levin (1997) 'Analyzing the Analysts', Information Week, 17th November. Available online: <http://informationweek.com/657/57iuana.htm> (accessed 29th March 2006).
- Zuckerman, Ezra (1999) 'The Categorical Imperative: Securities Analysts and the Illegitimacy of Discount', *American Journal of Sociology*, 104: 1398-1438.

Neil Pollock is a Reader in the sociology of information systems at the University of Edinburgh. He is co-author (with James Cornford) of *Putting the University Online: Information, Technology and Organisational Change* (Open University Press, 2003) and co-author (with Robin Williams) of *Software and Organisations: The Biography of the Enterprise-wide System or How SAP Conquered the World* (Routledge, 2009).

Address: University of Edinburgh Business School, University of Edinburgh, William Robertson Building, George Square, Edinburgh EH8 9JY, UK; email: neil.pollock@ed.ac.uk

Robin Williams is Professor of Social Research on Technology and Director of the Research Centre for Social Sciences, University of Edinburgh. He has published widely on the social shaping of ICTs and has written (with James Stewart and Roger Slack) *Experimenting with Information and Communication Technologies: Social Learning in Technological Innovation* (Edward Elgar, 2005).

Address: Research Centre for Social Sciences, University of Edinburgh, Old Surgeon's Hall, High School Yards, Edinburgh EH1 1LZ, UK; email: robin.williams@ed.ac.uk

Figure One: The Magic Quadrant

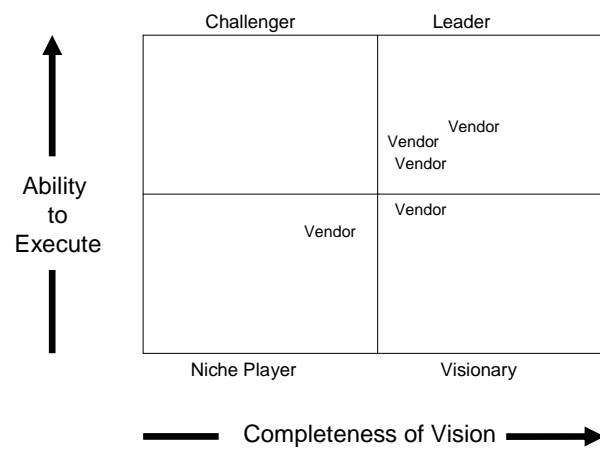


Table One: The Business of Technological Expectations - A Typology of Promissory Behaviour

	Kind	Effect	Accountability
Infrastructural Knowledge	<ul style="list-style-type: none"> - definitions & classifications of technology markets -strongly institutionalised (invisible until breakdown) 	<ul style="list-style-type: none"> -organising change in the marketplace -strong and enduring influence (promissory-work made durable) 	<ul style="list-style-type: none"> -advances in a slow & careful manner -authoritative
Statements & their World	<ul style="list-style-type: none"> -assessments of relative location of suppliers within product markets for different user sectors. - active attempt to make research successful 	<ul style="list-style-type: none"> -strong but contested influence (dividing objects) -creates winners & losers 	<ul style="list-style-type: none"> -brings about 'accountable' change -process behind tools robustly defended
Visions Let Loose	<ul style="list-style-type: none"> -signposts drawn up about the state of industry and future development (longitudinal predictions) -transient statements 	<ul style="list-style-type: none"> -some influence but typically only 'temporary' 	<ul style="list-style-type: none"> -speculative & low in accountability -not subject to close scrutiny or sanction -does not appear to damage reputation if inaccurate

Notes

This paper was written whilst Neil Pollock was funded under an Economic & Social Research Council fellowship (RES-063-27-0221) on the Social Study of the Information Technology Marketplace. Early versions of the article have been presented at a number of forums. The arguments developed here have benefited from the critical comments of a wide range of colleagues at Edinburgh and elsewhere. These include Barry Barnes, Chris Carter, James Cornford, Luciana D'Adderio, Simon Down, Michael Faust, Sampsa Hyysalo, Antonios Kaniadakis, Kornelia Konrad, Donald MacKenzie, Arthur Mason, Nathalie Mitev and James Stewart. We would also like to thank Sergio Sismondo, Mike Lynch and the three anonymous referees for helping us strengthen the structure and clarity of our arguments.

1 The Gartner Group is by far the largest and most influential of industry analysts (Firth & Swanson 2002; Burks 2006). Founded by Gideon Gartner in 1979, it has its headquarters in Stamford, Connecticut as well as offices in various places around the world. It employs 4,300 associates, 1,400 of which are described as 'expert analysts' and 'consultants'. Gartner's are divided into three main parts. This includes the organisation of 'events' bringing together vendors and users to discuss the latest technologies. It offers 'consultancy' in the same way as more general management consultancy organisations. Finally, and this accounts for 80% of its revenue, it produces research.

2 This is not – and could not be – a complete or systematic typology, but rather an initial attempt to investigate the potential for an empirically grounded characterisation of the different 'kinds' of expectations produced, their variability in 'effect', and how, as will also become clear, they are subject to different 'webs of accountability'. This is not a 'complete' typology because we are at the beginning of a programme of enquiry into the work and activities of industry analysts. Thus, we see this as the opening stage in what will undoubtedly become a much more complex typology. We are also not attempting a 'systematic' typology because promise and expectations are such an all-encompassing feature of human activity it would seem presumptuous to generate an empirically-validated map of promissory processes. Moreover, whilst there may be generic similarities between expectations, promissory organisations operate within particular contexts. We return to this issue in the concluding part of the paper.

3 This is in contrast to some of the recent work from the Sociology of Expectations which presents a rather linear or causal view of predictions. For instance, Borup *et al.* (2006: 286) write that expectations are both the "cause and consequence of material scientific and technological activity".

4 Vendor rating are a common service that most industry analyst firms will provide. They are a mix of factual details about the vendor's history, its current and past customers, its financial health, as well as opinion about its solutions, practices and strategies.

5 CAUSE is a US non-profit organisation that has as its mandate the promotion and increased diffusion of information and communication technologies (ICTs) within higher education. It is today known as 'EduCause'.

6 Research councils, or those funding and developing research programmes, may be one example. For a discussion of Dutch research councils fulfilling this role see Van der Meulen and Rip (1998).